

The rediscovery of *Eucalyptus nutans* F. Muell. from the south coast of Western Australia

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Abstract

Eucalyptus nutans F. Muell. (Myrtaceae) has been re-discovered after being misidentified and lost for more than a century. It was first collected in 1862 from near Bremer Bay on the south coast of Western Australia by George Maxwell and subsequently described by Ferdinand von Mueller in 1863. It was recollected by Herbert Demarz in 1973 and 1979, and cultivated at Kings Park and Botanic Garden, though not recognised as the long-lost typical *E. nutans* until our research reported herein. Although somewhat well known in cultivation, it is rare in nature and in need of *ex situ* conservation. The reserve on which it occurs is recommended to be added to Fitzgerald River National Park.

Keywords: Bremer Bay, *Eucalyptus cernua*, horticulture, Moort, conservation

Introduction

Despite increasing interest in eucalypts by botanists, and for their utilisation in forestry, ornamental horticulture, landscape plantings and bushland restoration, significant taxonomic issues remain to be resolved, especially in Western Australia. This applies even for some of the best known and most widely used ornamental mallees. Even new species of forest trees have remained obscure to science until recently (e.g. Hopper & Wardell-Johnson 2004).

Here, we report a case of misapplication of a name in wide use for more than a century, and of the rediscovery of the true identity of what was believed to be a well-known southwest-eucalypt.

The Noongar Aboriginal people knew the small, round leaved, spreading, non-lignotuberous trees from the south coast and nearby inland areas collectively as the “moorts”. Brooker & Hopper (2002) applied the other Noongar term “marlock” to this group of eucalypts as a way of standardising the name for those that occur as “more or less pure stands of short, erect, thin-stemmed ‘trees’, that do not produce lignotubers”. Both names are therefore accepted as the common name of the members of the group of predominantly Western Australian south coast endemic eucalypts that includes *Eucalyptus cernua* Brooker & Hopper, *E. platypus* Hook. subsp. *platypus*, *E. platypus* subsp. *congregata* Brooker & Hopper, *E. nutans*, *E. utilis* Brooker & Hopper and *E. vesiculosa* Brooker & Hopper.

Eucalyptus nutans was described by Ferdinand von Mueller (1863) from material collected by George Maxwell near Bremer Bay in southern Western Australia (Fig. 1). Previously *Eucalyptus platypus* was described in 1851 from material collected near King George’s Sound. Around a century and a half later, Brooker and Hopper (2002) published the names *Eucalyptus platypus* subsp. *congregata*, *E. cernua* and *E. vesiculosa*.

Eucalyptus nutans was thought for many years to have been the same red-flowered moort collected near Ravensthorpe now known to be *Eucalyptus cernua*. The circumscription of the latter species then also included the more-recently recognised mallee taxon *E. proxima* Nicolle & Brooker (2005). Brooker & Hopper (2002), when naming the Ravensthorpe district mallees as *E. cernua*, indicated that the type of *E. nutans* was a variant of *E. platypus* but at the time they had not seen *E. nutans* in the field near Bremer Bay.

Previously, Herbert Demarz, Kings Park and Botanic Garden seed collector from 1968 to 1989, collected near Bremer Bay in 1973 and 1979 a red-flowered tree believed at the time to be *Eucalyptus platypus*. Three trees from seed from these collections were planted and persist in the parkland of the LotteryWest Family Area at Hale Oval in Kings Park and Botanic Garden. In 1992, one of us (N McQ) collected a red-flowered eucalypt near Bremer Bay which matched these plantings.

Further investigations in the field near Bremer Bay during 1999 to 2003, including a joint trip in 2003, convinced us that this was likely to be the type site of von Mueller’s *Eucalyptus nutans*, and that the species was indeed distinct from *E. platypus* (Table 1, Fig. 2)



Figure 1. Holotype of *E. nutans* (photograph by National Herbarium of Victoria). Reproduced with permission from the State Botanical Collection, National Herbarium of Victoria (MEL).

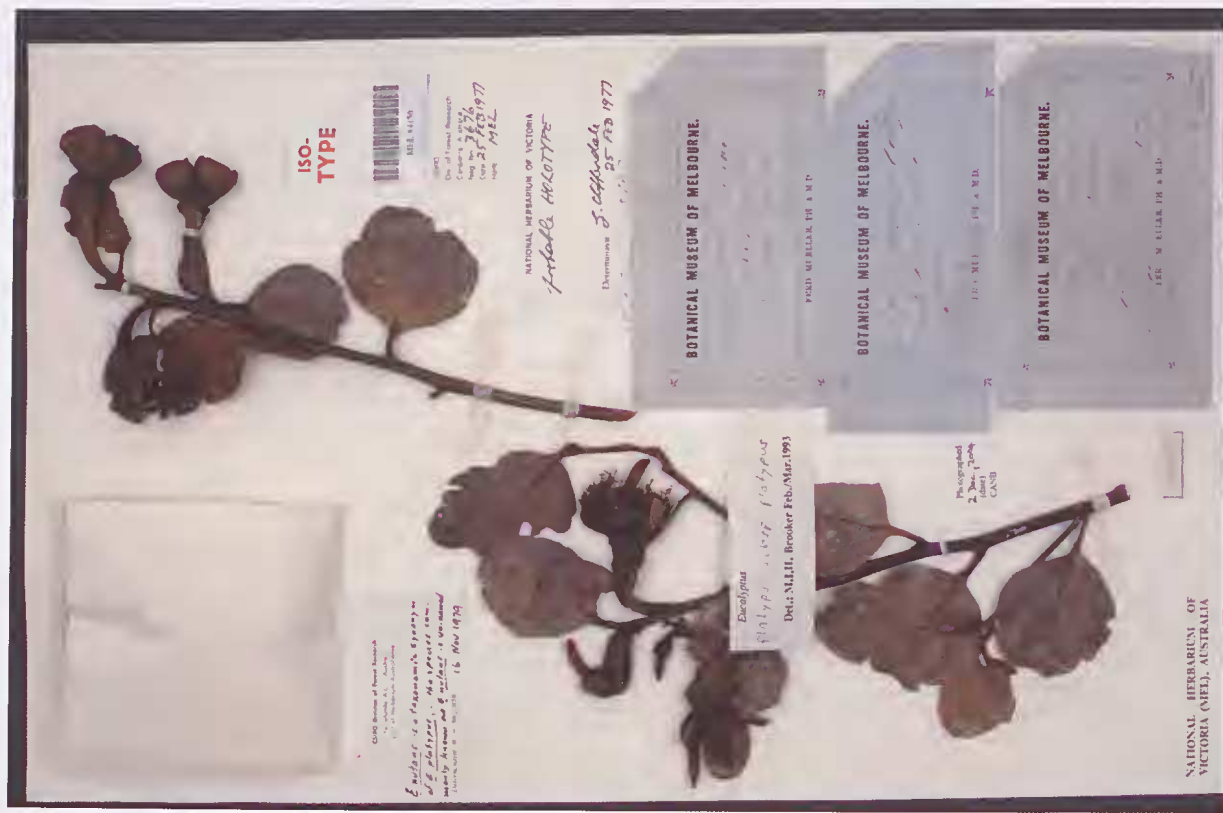


Figure 2. Isotype of *E. nutans* (photograph by National Herbarium of Victoria). Reproduced with permission from the State Botanical Collection, National Herbarium of Victoria (MEL).



Figure 3. Buds and fruits of *E. platypus* subsp. *platypus* Pt Ann and *E. nutans* (photo N. McQuoid).



Figure 5. Buds, flowers and fruit of *E. nutans* November 2006 (Photo N. McQuoid).



Figure 4. Buds, flowers and fruit of *E. nutans* in hand of Bremer Bay Identity Priscilla Broadbent (photo N. McQuoid).



Figure 6. Ten metre tall grove of very old *E. nutans* with Bremer Bay identity Don Scott providing a 1.9 metre scale (photo N. McQuoid).

Eucalyptus nutans F. Muell. Fragm. 3:152 (1863). Type: Bremer Bay, December 1862, *G Maxwell* s.n. Holo: MEL 84155! Iso MEL 84156!

E. platypus var. *nutans* (F. Muell.) Benth., Fl. Austral. 3: 235 (1867)

Erect marlock or moort to 10 metres, non-lignotuberos, killed by fire; leaves dark green, petiolate, thick, glossy, ovate to orbicular, (52-) 63 (-73) x (33-) 43 (-50)mm; peduncle broad, long, strap-like, down-curved to pendulous, (35-) 55 (-66) x (9-) 14 (-18)mm; buds obtusely conical, slightly warty, narrower than the hypanthium, (8-) 10 (-11)mm x 3.5mm; stamens red (rarely cream); fruit sessile, cupular to obconical, 4 winged, rim narrow, descending, valves 5 in a distinct wheel-like arrangement; seed black, compressed obovoid to ovoid, 1 – 1.75 x .75 – 1mm. (Figs 1, 2 and 3)

Affinities

Eucalyptus nutans is in the *Eucalyptus* sect. *Bisectae* Maiden ex Brooker, subsect. *Glandulosae* Brooker, ser. *Erectae* Brooker, and suprasp. *Latae* Brooker (Brooker 2000). It has erect stamens and shares many characteristics with the other members of the *E. suprasp. Latae* (i.e. *Eucalyptus utilis*, *E. platypus* subsp. *platypus* and *E. platypus* subsp. *congregata*). It differs by its shorter operculum, more robust and winged fruit with a wider disc and more prominent valves; its wider, longer and often curled peduncles; its larger round green leaves; its taller stature; and its almost exclusively red flowers (two plants at the type and only known location have cream flowers).

Specimens examined

(Precise location withheld). WESTERN AUSTRALIA: Bremer Bay, Feb 1973, *H Demarz* 4293 (KPBG); Bremer Bay, 20 November 1979, *H. Demarz* 7830 (KPBG); Bremer Bay, 9 August 1992, *N McQuoid* NKM 309 (CANB); Bremer Bay, 30 December 2002.

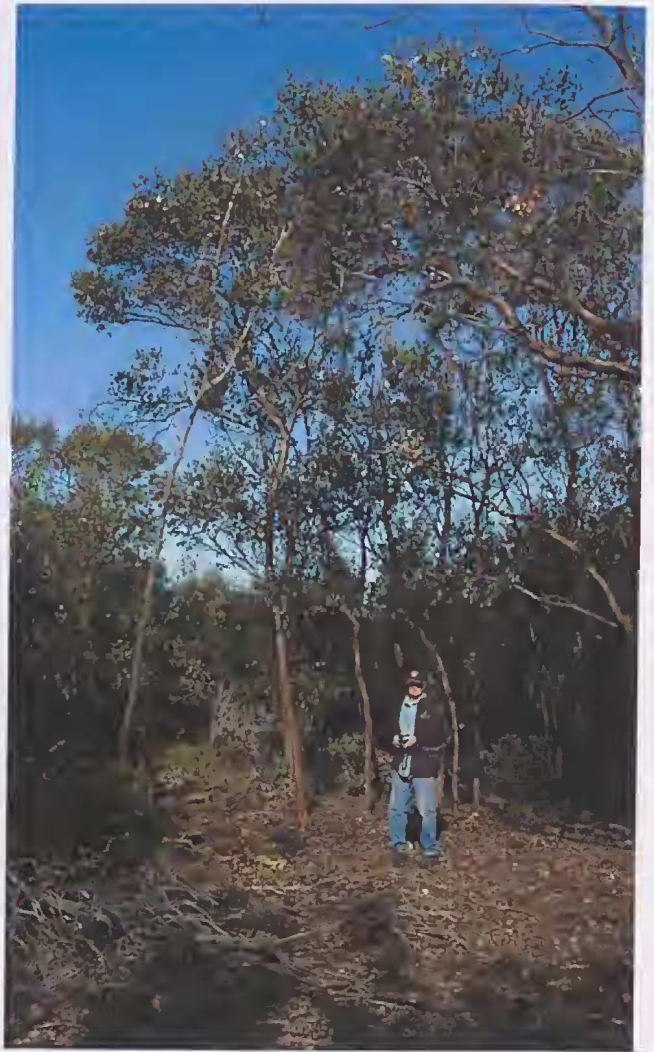


Figure 7. Seven metre tall trees of *E. nutans* near Bremer Bay with Bremer Bay identity Don Scott providing a 1.9 m scale (photo N. McQuoid).

Table 1

Comparison of key morphological features between *Eucalyptus nutans* and *E. platypus* subsp. *platypus*

| | Adult leaves | Peduncle | Fruit | Operculum |
|---|---|--|---|---|
| <i>Eucalyptus nutans</i> (Bremer Bay) | Ovate to orbicular, glossy dark green, petiolate, (52-) 63 (-73)mm long x (33-) 43 (-50) mm wide | Broad, long, strap-like, down-curved to pendulous, (35-) 55 (-66) mm long x (9-) 14 (-18)mm wide | Sessile, cupular to obconical, 4 winged, rim narrow, descending, valves 5 in a distinct wheel-like arrangement (17-) 22 (-29)mm long x (13-) 16 (-20) mm wide | Obtusely conical, slightly warty, (9-) 12 (-15)mm long x 4 – 5mm wide |
| <i>Eucalyptus platypus</i> subsp. <i>platypus</i> (Pt Ann, Fitzgerald River National Park) | Obovate to orbicular, petiolate, glossy mid to dark green, (36-) 45 (-64)mm long x (34-) 40 (-48) mm wide | Broad, erect to slightly down-curved, (40-) 42 (-53)mm long x (9-) 11 (-13)mm wide | Sessile to very slightly pedicellate, slightly 4 winged, obconical to barrel shaped, rim thick, disc level to slightly ascending, valves 4, to rim level or slightly exserted (17-) 19 (-22)mm long x (12-) 15 (-18)mm wide | Horn shaped, smooth, (13-) 18 (-21)mm long x 4 mm wide |

Measurements show range in brackets either side of average

Distribution and habitat

Known from a single population near Bremer Bay on the south coast of Western Australia. Occurs on gravelly clay over spongolite marine sediments on an unvested reserve adjacent to Fitzgerald River National Park. It grows in a more or less pure stand with *Acacia glaucoptera*, *A. cyclops*, *Hakea laurina*, *Eucalyptus anceps*, *E. occidentalis*, *Rhadinothamnus rudis*, *Lepidosperma* sp, *Astroloma* sp.

Flowering period

November to April

Common name

Eucalyptus nutans F. Muell. is known locally by the common names Bremer or red-flowering moort.

Conservation status

Recommended for listing as Declared Rare Flora (DRF) under the Department of Environment and Conservation of WA (DEC) conservation codes. The type site of *Eucalyptus nutans* is its only known location where it occurs as several thousand plants over a few hectares. The population is in three age classes of eight very old ten-metre tall trees adjacent to a stand of younger six-to-seven metre tall trees, with both surrounded by a 21 year-old four-metre tall thicket where a 1995 fire burnt the majority of the population. It hybridises here with *Eucalyptus occidentalis*. It is rare in nature, and more commonly known as cultivated plants in gravel pits east of Albany and at Kings Park.

The only known site is not in the current conservation estate and searches in the Fitzgerald Biosphere area have failed to find it elsewhere

Despite its small area of natural occurrence, *E. nutans* grows well in cultivation at Kings Park and Botanic Garden, and was apparently planted by the late Spike Daniels in gravel pits as a rehabilitation species seventy to one hundred kilometres east and north-east of Albany. *Ex situ* conservation by growing it in landcare and ornamental horticulture plantings on suitable soils in the Bremer Bay area would be beneficial to its long term survival

The CALM South Coast Management Plan 1992 – 2002 (Anon 1991) recommends that the two unvested reserves where, and adjacent to where, *Eucalyptus nutans* occurs should be included into Fitzgerald River National Park. Implementing this recommendation would improve its conservation status.

Notes

The story of *E. nutans* illustrates the fundamental importance of rigorous and accurately applied systematics research to successful conservation of biodiversity. Typical *E. nutans*, a rare and highly-localized endemic species vulnerable to extinction through frequent fires, remained obscure and uncollected for 130 years, with its name incorrectly applied to an

undescribed mallet (*E. cernua*). Because of its vulnerability to fire, *E. nutans* may well have been rendered extinct in the future, had it not been recognised as different and worthy of investigation by Demarz, Daniels and ourselves.

In this regard, there are many other parallels applying to the southwest flora, where fully a third of the 8000 currently recognised species have only been described since the 1960s, and some 14% remain without a formal scientific description (Hopper and Gioia 2004). Countless cases also exist, as here, of species complexes needing careful attention to the circumscription of taxa already named. With taxonomy still in need of elucidation for eucalypts, among the largest and better known of plant groups in the flora, systematic research backed up by field surveys deserves ongoing attention.

Acknowledgements: We are grateful to the late Herbert Demarz, Kings Park and Botanic Garden Seed Collector, 1968 – 1989, who collected this taxon near Bremer Bay in the 1970's, and the late Spike Daniels for noticing and growing this taxon. Luke Sweedman, Seed Collector, Botanic Gardens and Parks Authority, alerted us to Herbert Demarz's collection. Marion Blackwell pointed out the presence of cultivated plants in Kings Park and Botanic Garden. Grady Brand Curator, Botanic Garden, Botanic Gardens and Parks Authority, offered comments on this taxon growing at Kings Park. Brendan Lepschi and John Connors of CANB provided access to information in their collection. Dean Nicolle was helpful in discussions regarding the taxonomic status of *E. nutans*. Assistance in the photography of the Holotype and Isotype of *E. nutans* was provided by staff of the National Herbarium of Victoria (MEL), Royal Botanic Gardens Melbourne, and the Australian National Herbarium (CANB), and this is gratefully acknowledged. The funding by the South Coast Regional Initiative Planning Team (SCRIPT) for the Ecosystem Support Project through the WA and Australian Governments also is gratefully acknowledged.

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